UTSouthwestern Medical Center

TITLE: Selective Killing of Metastasizing Melanoma Cells Through Inhibition of NADPH-Generating Folate Pathway Enzymes, ALDH1L1 and ALDH1L2.
INVENTORS: Sean Morrison and Elena Piskournova
TECHNOLOGY: Biologicals
UTSD: 2899

SUMMARY:

The folate pathway is a major source of cellular NADPH. While anti-folate agents have been widely used to shrink tumors, this IPQ discloses that they are much more effective in preventing metastasis because metastasizing cells are particularly dependent on the folate pathway. Therefore, this IPQ proposes that inhibiting NADPH-generating enzymes in the folate pathway including ALDH1L1 and ALDH1L2, will kill metastasizing cells, delay disease progression, and increase the survival of patients with melanoma and possibly other solid malignancies.
Currently, no therapeutic strategies that specifically target metastasizing melanoma cells have been reported. The discovery that metastasizing melanoma cells rely on NADPH-generating folate pathway enzymes ALDH1L1 and ALDH1L2 is unique. This offers the opportunity to specifically target metastasizing melanoma cells by exacerbating their oxidative stress, for example by using a general folate pathway inhibitor (i.e. methotrexate) or developing inhibitors against ALDH1L1 and ALDH1L2.

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Please reference UT Southwestern Case Number: **2899**